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## AGRICULTURE AND LANDOWNERSHIP IN POLAND

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Of the post-war economic problems facing the European nations those of Poland may well be described as unique. In addition to reparation of the ravages of war and to the adjustment of frontier difficulties the reconstituted nation must organize and consolidate lands subjected for more than a century to alien powers. The complexity of the situation is realized in an attempt to estimate that vital question—the future of Polish agriculture.

At present the food requirements of the people can be satisfied only in a very restricted way, and hundreds of thousands of families are starving. During the winter the death rate rose very high, hunger typhus making great ravages among the poor. Import of food commodities has been practically impossible, mainly because of the prohibitive rate of exchange. Last summer the cornfields looked most promising, but the military reverses and the consequent retreat of the Polish army brought the Bolshevik front far into Poland just at harvest time. The entire country north and east of this battle front (see Fig. 1) was completely devastated, and Poland has received no compensation from Bolshevik Russia for this destruction, no payment for the destroyed crops and property.

Thus it is easy to understand that the present conditions are abnormal and that the potential agricultural possibilities of Poland can be judged only by the statistical data of former years.

### SOURCE OF THE STATISTICAL DATA

It was my privilege to compile the statistical data concerning Poland for the American Delegation to the Peace Conference. The figures given below are taken from the extensive report on agriculture which I then prepared. The original figures used for that report were taken from official Austrian, Prussian, and Russian publications.

In order to have a satisfactory approximation, averages of the five years 1908-1912 were made. Population statistics of 1910 gave the figures needed for calculating the yield per capita.

The entire area of the territories to the east and north belonging to Poland before the partition of 1772 was taken into consideration, as well as the Mazurian districts of East Prussia, Upper Silesia, and the Teschen district. But, since the present boundaries of Poland do not correspond perfectly to old administrative divisions, an exact calculation cannot be made. For example, the frontier established by the Peace Conference of Paris cuts away in favor of Germany parts of several districts of the province of Posen. Thus inclusion of the entire agricultural production of the province gives a grand total which is too high. This discrepancy, however, may be corrected to a great extent by making the calculation per capita.

On the inserted maps (Fig. 2) the shadings corresponding to the different gradations per capita are given for the entire area for which I compiled statistical data (with the exception of East Prussia), whereas the figures tabulated to accompany the maps are only for those provinces or governments that were incorporated (entirely or in part) into Poland by the Peace Conference of Paris and the provisional agreement with the Soviet Government of Russia at the Riga Conference (Fig. 1).

The population of these areas in 1910 is shown in Table I.

TABLE I—POPULATION OF POLISH PROVINCES

Posen (Poznań) . . . . .	1,335,884	Congress Poland. . . . .	12,129,200
Bromberg . . . . .	763,945	Vilna (Wilno) . . . . .	1,996,900
Danzig . . . . .	742,619	Grodno . . . . .	1,951,700
Marienwerder . . . . .	960,855	Volhynia . . . . .	3,846,500
Cracow . . . . .	2,689,854	Upper Silesia . . . . .	2,207,981
Lemberg (Lwów) . . . . .	5,335,821	<i>Total</i> . . . . .	33,961,259

#### SUMMARY OF PRODUCTION AND CONSUMPTION

For the total population as given in Table I the production of food crops (not including vegetables and fruit) per annum per capita was: wheat, 61 kilograms; rye, 190; barley, 51; oats, 98; potatoes, 814; beet sugar, 20.

TABLE II—GRAIN REQUIREMENTS IN GERMANY, RUSSIA, AND CONGRESS POLAND  
(*Kilograms per capita*)

	GERMANY	RUSSIA	CONGRESS POLAND
Wheat . . . . .	89.4	94.3	51
Rye . . . . .	143.8	127.7	157
Barley . . . . .	88.8	39.3	39
Oats . . . . .	123.5	85.2	78

As regards consumption, however, these figures are too high because the quantities necessary for seed have not been subtracted. The average seed requirements may be placed at one-eighth of the crop. Subtracting this fraction from the total production we have: wheat and rye, 220 kilograms; barley, 45; potatoes, 642.

An estimate of the grain requirements of the population has been made by Rasinski<sup>1</sup> on the basis that consumption in Poland is intermediary between



FIG. 1.—Key map to accompany the distribution maps of Poland. The boundaries are thus: 1, boundaries established by the Peace Conference of Paris and by subsequent plebiscites; 2, limits of plebiscite areas (in the case of Teschen, Orawa, and Spits the limits of the disputed areas are shown and the proposed boundary according to preliminary agreement between Poland and Czecho-Slovakia); 3, preliminary line of the Riga Conference (Oct., 1920); 4, military demarcation line between Poland and Latvia and Lithuania (1919); 5, international boundaries of 1914; 6, interprovincial and intergovernmental boundaries of 1914.

Germany and Russia. Taking into account the export and import of grain and flour and the net production after deducting 13 per cent for seed, he arrived at the actual requirement for Congress Poland. It is given in Table II along with consumption in Germany and Russia (1907–1911).

As the requirements may be supposed to be slightly higher in Posen and much lower in the eastern provinces, the available average of 250 kilograms of wheat and rye is therefore higher than the normal requirement, leaving a certain quantity of grain (about 407,000 tons) available for storage or export.

<sup>1</sup> F. Rasinski: *Sily twórcze*, Petrograd, 1916.

# THE CHIEF FOOD CROPS OF POLAND IN RELATION TO POPULATION

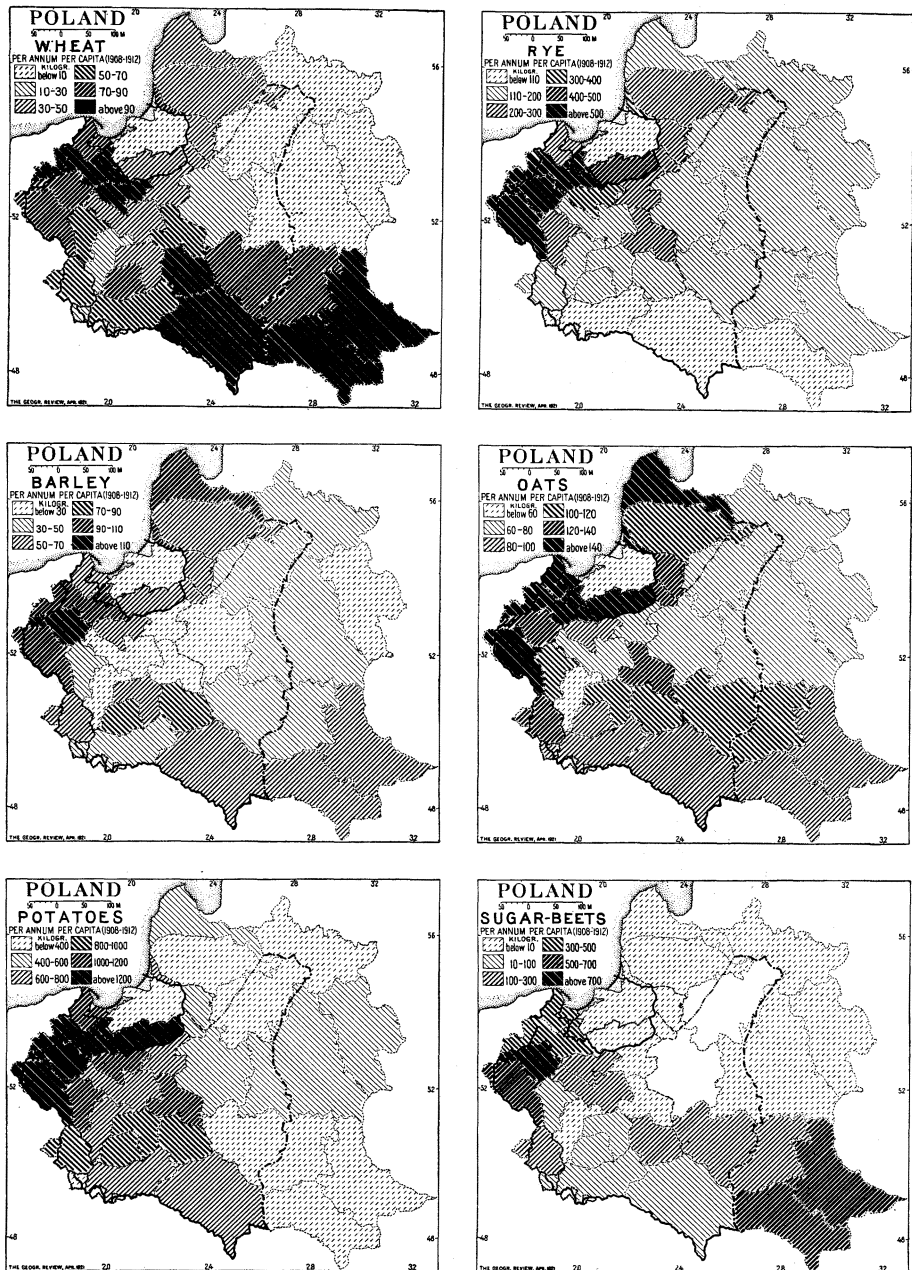


FIG. 2.—Distribution maps showing production of food crops per annum per capita. The figures are based on crop statistics for the years 1908-1912 and population for 1910. The maps exhibit in striking fashion the high relative productivity of former Prussian Poland especially in contrast with the northeastern area, a fact to be explained largely in terms of superior administration and agronomics.

**WHEAT**

**RYE**

	Mean annual production in 100,000 kg.	Yield in kg. per ha.	Production per annum per capita in kg.	Mean annual production in 100,000 kg.	Yield in kg. per ha.	Production per annum per capita in kg.
Posen	1,050	2,108	78	7,133	1,753	534
Bromberg	638	2,074	84	4,338	1,742	568
Danzig	600	2,488	81	1,573	1,595	212
Marienwerder	1,099	2,074	114	4,881	1,637	508
Cracow	1,348	1,087	50	2,912	1,115	108
Lemberg	5,260	1,276	99	5,558	1,249	104
Congress Poland	6,198	1,233	51	22,289	1,055	184
Vilna	103	669	5	3,410	676	173
Grodno	229	908	12	3,306	781	169
Volhynia	3,031	1,062	79	5,847	901	152
Upper Silesia	1,128	1,850	51	3,127	1,675	142
Total area	20,684	—	61	64,374	—	190

**BARLEY**

**OATS**

	Mean annual production in 100,000 kg.	Yield in kg. per ha.	Production per annum per capita in kg.	Mean annual production in 100,000 kg.	Yield in kg. per ha.	Production per annum per capita in kg.
Posen	1,301	2,018	97	1,982	1,912	148
Bromberg	1,044	2,044	137	926	1,814	121
Danzig	518	2,409	70	1,263	1,973	170
Marienwerder	1,043	1,999	109	1,726	1,767	180
Cracow	1,150	1,068	43	2,602	1,039	97
Lemberg	2,778	1,171	52	4,905	1,120	92
Congress Poland	5,647	1,123	46	10,582	920	87
Vilna	689	679	34	1,398	633	70
Grodno	410	766	21	1,281	659	66
Volhynia	1,682	910	44	3,943	907	102
Upper Silesia	1,202	2,065	54	2,659	1,935	120
Total area	17,464	—	51	33,267	—	98

**POTATOES**

**SUGAR BEETS**

	Mean annual production in 100,000 kg.	Yield in kg. per ha.	Production per annum per capita in kg.	Mean annual production in 100,000 kg.	Yield in kg. per ha.	Production per annum per capita in kg.
Posen	28,579	15,018	2,139	7,308	27,956	547
Bromberg	14,462	14,293	1,893	6,433	26,120	842
Danzig	7,485	13,279	1,008	2,402	27,369	323
Marienwerder	19,228	13,931	2,001	4,521	27,154	471
Cracow	17,418	9,813	648	291	24,365	11
Lemberg	42,278	12,749	792	980	21,121	18
Congress Poland	100,818	9,643	831	13,624	14,796	112
Vilna	7,565	6,191	379	—	—	—
Grodno	7,845	6,460	402	—	—	—
Volhynia	12,253	7,833	319	5,278	14,879	137
Upper Silesia	18,699	13,819	847	3,655	28,256	166
Total area	276,630	—	814	44,492	— (sugar) 20	—

There is also a surplus in the production of barley (6 kilograms per capita), and the potato crop is certainly very much above the requirement.

#### REASONS FOR INCREASED PRODUCTION IN THE FUTURE

This summary of statistical data leaves no doubt that in agricultural production the Republic of Poland is a self-sustaining country. But this

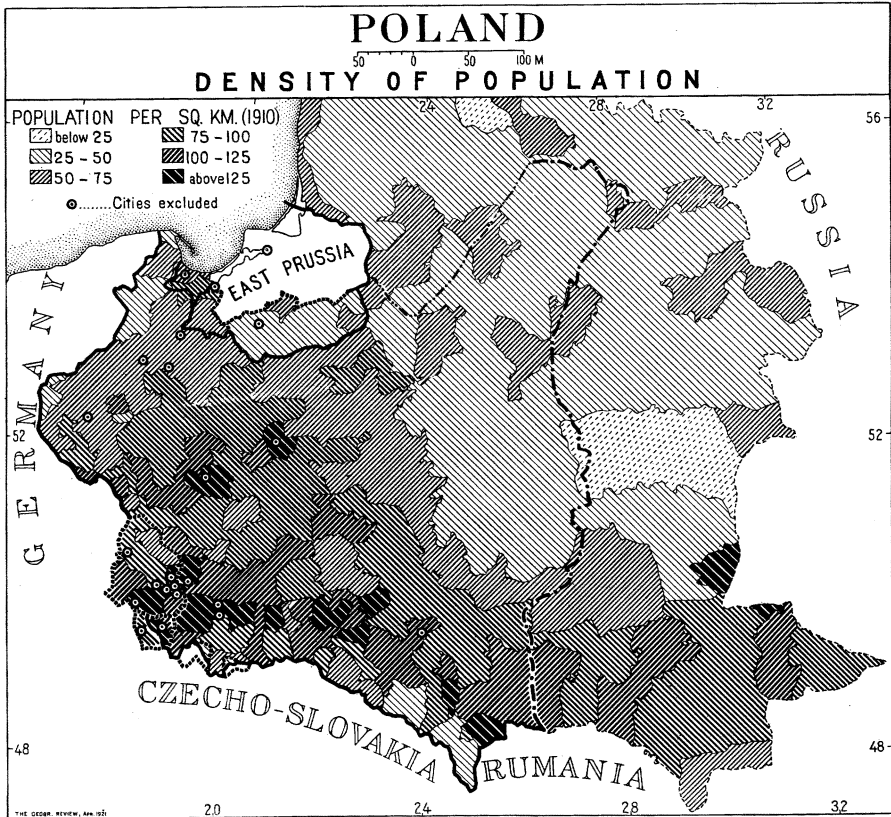


FIG. 3.—The density of population in Poland in 1910. As a consequence of the war great changes have taken place in eastern Poland. In some of the districts of the governments of Grodno and Minsk the decrease of population is estimated at 50 per cent or more. Thus the marked difference between the density of population in eastern and southern (foothills of the Carpathians) Poland has been still further accentuated.

is not all. Poland is in a dynamic state of transformation, reconstruction, and improvement. Progress is inevitable; agricultural production must increase, as the following considerations will demonstrate.

The boundary lines that divided Poland among the three former Empires of Russia, Germany, and Austria no longer existing, the imprint of the Russian, Prussian, and Austrian administrations will gradually disappear.

Differences of soil and climate are not sufficient to explain the contrast in the figures 2,108, 1,276, and 669, which express the yield of wheat, in kilo-

grams per hectare, respectively in Posen, Eastern Galicia, and the Government of Vilna, that is to say in the western, southern, and northeastern parts of the country. These figures show the imprint of Prussian, Austrian, and Russian administration, and their difference is mainly due to greater or less progress; proper administration in one case and lack of administration in the other. Simple comparison of these three figures shows the vital importance of the readjustment problems to the new political and economic conditions.

On the other hand, we have a case of encouraging progress from the area within the triangle formed by the above-cited provinces, that is in Congress Poland. While the population was 8,256,562 in 1890 and 12,776,100 in 1912, an increase of 4,519,538 or, let us say 50 per cent, agricultural progress was much more rapid. The production of each of the principal crops—wheat, rye, barley, oats, and potatoes—more than doubled in the same length of time. Increase in relation to increased population is shown in Table III.

TABLE III—INCREASE OF AGRICULTURAL PRODUCTION IN RELATION TO  
INCREASE OF POPULATION

(Figures in puds per capita: 1 pud = 16.38 kilograms)

	WHEAT	RYE	BARLEY	OATS	POTATOES
1890 . . . . .	2.46	8.50	1.99	4.17	37.63
1912 . . . . .	3.20	11.53	3.05	5.60	53.48

The graphic representation of annual data displays the continuous progress made therein. Furthermore, it must be remembered that the yield is still very inferior. In spite of the progress achieved an "abyss," as Romer terms it, separates the agricultural yield of the late Russian and Austrian from that of Prussian Poland. Thus the yield per hectare (1908-1912) of wheat is 2,108 kilograms in Posen and only 1,233 kilograms in Congress Poland, and like differences obtain in respect of all other crops. For the yield in Congress Poland to reach much higher figures is only a question of skill and organization, of better agricultural implements, and the extensive use of artificial fertilizers, potash in particular. In regard to the last point it may be noted that Poland's resources include the potash deposits of Kalusz, Szubin, and other localities.

#### CHARACTER OF THE OCCUPATION OF THE LAND

Progress also lies in agrarian reform. Up to the present a great part of the land, especially in the east, has been held by a comparatively small number of large landowners. Some landowners have left their properties uncultivated or have cultivated only a restricted area, and the rural population of overcrowded districts has been obliged to emigrate because of lack of land. At present 40 per cent of the total area of Poland, or about 12,000,-



000 hectares, is owned by approximately 18,000 landowners. On the other hand, in some of the small, densely populated districts of Galicia—with over 125 inhabitants per square kilometer—the rural population exceeds 18,000 on less than 18,000 hectares of land.

The figures for areas under the principal crops are significant. I have added them for wheat, rye, barley, oats, potatoes, and sugar beets, expressing the result in percentage of the total area. Remarkable differences between the different provinces are shown. The extreme values are: Posen 47 and Grodno 21. The value for Congress Poland is 43, for Eastern Galicia 34. These figures may be compared with data showing the general occupation of the land.

TABLE IV—OCCUPATION OF THE LAND  
(Percentages)

	POSEN (1913) *	GRODNO (1887) †
Area occupied by buildings . . .	1.0	4.2
Arable land and gardens . . . .	64.6	39.7
Meadows and pastures . . . . .	9.9	19.6
Forests . . . . .	19.9	23.7
Waste land . . . . .	0.9	12.8

\* *Statistisch Korrespondenz*, Berlin, Vol. 41, 1915, No. 19, p. 2

† *Svod statisticheskikh Svedyeni, Minist. Zeml. i Gosud.*, St. Petersburg, 1902, Vol. 1, p. 35.

The 47 per cent cited above for the principal crops in Posen leaves, therefore, only 17 per cent of land for other crops and gardens. For the Government of Grodno unfortunately there are no recent statistics available. However, if in 1887 the arable land occupied 39.7 per cent of the total area, we may presume that the figure for 1910 would be at least 5 per cent higher. If so, the 21 per cent of the total area used for wheat, rye, barley, oats, and potatoes would leave 20 to 25 per cent for flax, vegetables, fruit gardens, etc.—which seems abnormal. The 4.2 per cent given for buildings is likewise extravagant. The area now occupied by forests is evidently much less than 23.7 per cent. The 19.6 per cent of meadows should be reduced, and some of the 12.8 per cent of swamp land could be reclaimed and transformed into pasture land. Compare now the yield of crops as shown by Table V.

TABLE V—YIELD OF PRINCIPAL CROPS  
(Kilograms per hectare)

	POSEN	GRODNO
Wheat . . . . .	2,108	908
Rye . . . . .	1,753	781
Barley . . . . .	2,018	766
Oats . . . . .	1,912	659
Potatoes . . . . .	15,918	6,460

It is true that the soil of Grodno does not compare with the soil of Posen, nor is the climate, with its long winter season, as favorable. It is in fact customary for the arable land to be left fallow every third, fourth, or fifth year. But the application of the land-reform bill will bring new possibilities into the region of Grodno; more land will be cultivated and probably under better conditions.

### CHANGES IN POPULATION DENSITY

With agrarian reform accomplished, the question of labor takes on new aspects and the population density map new interest. The map expressing the distribution of density of population (Fig. 3) was drawn with more detail than the other maps. Instead of showing figures for provinces, or governments, it shows figures for the smaller administrative divisions, mainly to illustrate the abnormal concentration of the rural population along the foothills of the Carpathians.

If the changes that have occurred as a direct consequence of the war could have been mapped, the great difference in density of population between Galicia and the eastern and northeastern provinces of Poland would have been even more accentuated.

The decrease in population of the northeastern districts of Poland, due principally to the Russian evacuation of 1915, is given in Table VI. To simplify comparison the districts are grouped in rows, running from southwest to northeast.

TABLE VI—RECENT DECREASE OF POPULATION IN NORTHEASTERN DISTRICTS OF POLAND\*

DISTRICT	PERCENTAGE OF LOSS	NUMBER OF INHABITANTS PER SQUARE KILOMETER IN 1910
GOVERNMENT OF VILNA		
Troki . . . . .	47	41
Vilna . . . . .	25	71
Swieciany . . . . .	22	39
GOVERNMENTS OF GRODNO AND VILNA		
Grodno . . . . .	47	56
Lida . . . . .	26	45
Oszmiana . . . . .	31	41
Wilejka . . . . .	14	40
GOVERNMENTS OF GRODNO AND MINSK		
Brzesc-Litewski (Brest-Litovsk) .	68	53
Pruzany . . . . .	61	41
Slonim . . . . .	55	40
Novogrodek . . . . .	37	60
Minsk . . . . .	13	66

\* The figures are from a manuscript official document.

Since similar changes occurred also in Volhynia, in the Chelm region, and in Eastern Galicia and since only a small percentage of those who were evacuated and are still alive will ever return, it may be understood that the present contrast of density of population between the southwest and west of Poland and the northeast and east is in reality much more pronounced than appears on the map and that, because of this fact, the surplus of the rural population of the southwest will naturally trend towards the east.

Of course the organization of a systematic migration of from 2,000,000 to 3,000,000 people from one part of the country to another would solve the

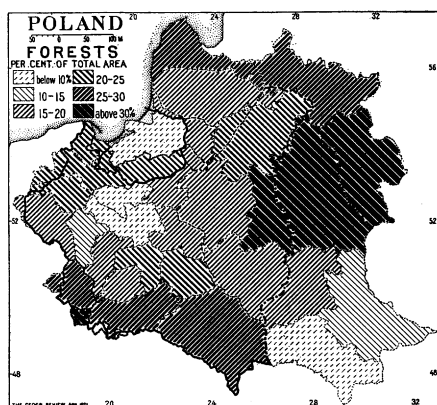


FIG. 4.—The distribution of forests.

problem. But, since the application of any such drastic method is out of question, it seems that agrarian reform should be relied upon to provide the necessary stimulus.

#### PROVISIONS OF THE LAND-REFORM BILL

An agrarian reform bill was voted by the Diet on July 15, 1920. In abstract, this bill authorizes the General Land Office, already organized, to proceed with the parcelment of the government-owned land and such lands as belonged to the former Russian Peasants Bank and to the former Prussian Colonization Commission. Furthermore, the Land Office has the right of expropriation in the following cases: administrative mismanagement; parcelment without government authorization; disposition of land bought between August 1, 1914, and September 14, 1919, by persons other than professional farmers, of properties which during the last five years have changed hands more than twice, of land acquired by war profiteers, of land in the neighborhood of towns or industrial centers, and of farms destroyed during the war which could not be reconstructed by the landholders.

An area of 60 hectares will be the largest allotment for suburban rural properties as is also the case for the neighborhood of industrial centers. In the former Prussian provinces and in eastern Poland 400 hectares is the

maximum, while everywhere else only 180 hectares are allowed to each farm. A landowner has the right to possess only one farm. However, exceptions will be made where the parcelment of large and well managed properties would be detrimental to the interests of the country. The same provision applies to stock and seed farms.

Other provisions of the bill concern the valuation of the land expropriated, agricultural schools, model farms, etc.

In the purchase and recolonization of the land priority will be given first to wounded soldiers of the war, then to farm laborers thrown out of employment by the parcelment of the large estates and to the small landholders of the surrounding country.

The land-reform bill will specially aid in the opening up of the north-eastern provinces—now backward and sparsely populated—to the more enterprising and progressive farmers and peasants of Galicia. The peasants, however, cannot settle in the devastated country without provision being made for housing and supplying them with the necessary farm stock and implements. If agricultural machinery, tractors, and farm animals were available, the migration of the people from one part of the country to another could be organized on a large scale, and the improvement would be rapid. Thus the progress made will depend primarily on the means placed at the disposal of the Polish Government.